



PATENT
132002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.: 7,072,435

Issued: July 4, 2006

Inventor(s): Metz et al.

Assignee: GE Medical Systems Global
Technology Company, LLC

For: METHODS AND APPARATUS FOR
ANOMALY DETECTION

Certificate
JUN 10 2008
of Correction

CERTIFICATE OF MAILING

I certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on June 2, 2008.

Eric T. Krischke
Reg. No. 42,769

Attention Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CERTIFICATE OF CORRECTION OF
PATENT UNDER 37 C.F.R. 1.322(a)

Sir:

Attached is Form PTO/SB/44 suitable for printing.

Submitted herewith is a copy of the Notice of Allowance and Fee(s) Due and the Notice of Allowability dated November 18, 2005 and the Supplemental Notice of Allowability dated April 20, 2006 including an Examiner's Amendment/Comment amending Claims 20 and 23, and a copy of the Amendment filed November 4, 2005. Applicants respectfully submit that the corrections shown below are in accordance with the Examiner's Amendment/Comment dated April 20, 2006 and the Amendment filed November 4, 2005. The corrections do not involve such changes in the patent as would constitute new matter or would require re-examination. Applicants respectfully request a Certificate of Correction for the following:

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In Claim 12, column 8, line 61, delete "at least one" and insert therefor --a plurality of--.

In Claim 12, column 8, line 61, delete "Radiograph" and insert therefor --Radiographs--.

In Claim 19, column 10, line 4, delete "A method" and insert therefor --The method--.

The corrections are not due to any error by Applicants and no fee is due.

The Assignment for this patent is recorded on Reel 014942/Frame 0890.

Respectfully submitted,

Date: June 02, 2008

Eric T. Krischke
Eric T. Krischke
Reg. No. 42,769
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 7,072,435
APPLICATION NO. : 10/766,362
ISSUE DATE : July 4, 2006
INVENTOR(S) : Metz et al.

PAGE 1 OF 1

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In Claim 12, column 8, line 61, delete "at least one" and insert therefor --a plurality of--.
In Claim 12, column 8, line 61, delete "Radiograph" and insert therefor --Radiographs--.
In Claim 19, column 10, line 4, delete "A method" and insert therefor --The method--.

MAILING ADDRESS OF SENDER:

Eric T. Krischke
Armstrong Teasdale LLP
One Metropolitan Sq., Suite 2600
St. Louis, MO 63102

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COPY

THE UNITED STATES PATENT OFFICE IS REQUESTED TO IMPRESS ITS STAMP ON THIS CARD AND PLACE SAME IN THE OUTGOING MAIL TO SHOW THE FOLLOWING PAPERS HAVE BEEN RECEIVED.

Atty. Dkt. No.: 132002 (12553-368)
Application of: Metz et al.
Filed: January 28, 2004
Serial No.: 10/766,362
For: METHODS AND APPARATUS FOR
ANOMOLY DETECTION

Enclosed:

- Amendment Transmittal which includes Certificate of Express Mail (3 Pages) (NO FEE)
- Amendment in Response to Office Action dated October 24, 2005 (14 Pages)
- Return Postcard

WJZ/lse

Express Mail No. EV679278660 US

Mailed: November 4, 2005

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Entered into PAGE/PIPS

Date 11-28-05

By: E. Deaton

SCANNED

By: RMP 11-9-05

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

COPY

Applicant: Metz et al.

Serial No.: 10/766,362

Filed: January 28, 2004



Art Unit: 2882

Examiner: Bruce, David Vernon

For: METHODS AND APPARATUS
FOR ANOMALY DETECTION

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL

1. Transmitted herewith is:
 - Amendment Transmittal which includes Certificate of Express Mail (3 pgs.)
NO FEE
 - Amendment in Response to the Office Action dated October 24, 2005 (14 pgs.)
 - Return Postcard

STATUS

2. Applicant
 - ☐ claims small entity status.
 - ☒ is other than a small entity.

**CERTIFICATE OF MAILING BY EXPRESS MAIL TO
THE COMMISSIONER FOR PATENTS**

Express Mail No. EV679278660 US
Date: November 4, 2005

I hereby certify that the documents listed above are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above in an envelope addressed to Mail Stop: Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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William J. Zychlewica, Reg. No. 51,366

SCANNED
By: RMP 11-9-05

EXTENSION OF TERM

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3. The proceedings herein are for a patent application and the provisions of 37 C.F.R. 1.136 apply.

(complete (a) or (b), as applicable)

- (a) _____ Applicant petitions for an extension of time under 37 C.F.R. 1.136
(Fees: 37 C.F.R. 1.17(a)-(d) for the total number of months checked below:)

Extension for response within:	Other than small entity Fee	Small entity Fee (if applicable)
_____ first month	\$ 120.00	\$ 60.00
_____ second month	\$ 450.00	\$ 225.00
_____ third month	\$ 1,020.00	\$ 510.00
_____ fourth month	\$1,590.00	\$ 795.00
_____ fifth month	\$2,160.00	\$1,080.00

Fee: \$ _____

If an additional extension of time is required, please consider this a petition therefor.

(Check and complete the next item, if applicable)

_____ An extension of _____ months has already been secured. The fee paid therefor \$_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$_____

OR

- (b) X Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

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FEE FOR CLAIMS

4. The fee for claims (37 C.F.R. 1.16(b)-(d)) has been calculated as shown below:

	(Col. 1) CLAIMS REMAINING AFTER AMENDMENT		(Col. 2) HIGHEST NO. PREVIOUSLY PAID FOR	(Col. 3) PRESENT EXTRA	SMALL ENTITY ADDITIONAL RATE FEE	OR	OTHER THAN SMALL ENTITY ADDITIONAL RATE FEE
TOTAL		MINUS	20	=	x \$25.00 = \$		x \$50.00 = \$
INDEP.		MINUS	3	=	x \$100.00 = \$		x \$200.00 = \$
— FIRST PRESENTATION OF MULTIPLE DEP. CLAIM					+ \$180.00 = \$		+ \$360.00 = \$
					TOTAL ADDITIONAL FEE \$	OR	TOTAL ADDITIONAL FEE \$

- (a) ☒ No additional fee for Claims is required

OR

- (b) ☐ Total additional fee for claims required \$ _____

FEE PAYMENT

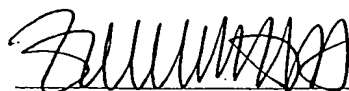
5. Attached is a check in the sum of \$ _____
- ☐ Charge Deposit Account No. 01-2384 the sum of \$ _____.
A duplicate of this transmittal is attached.

FEE DEFICIENCY

6. ☒ If any additional extension and/or fee is required, charge Deposit Account No. 01-2384.

AND/OR

- ☒ If any additional fee for claims is required, charge Deposit Account No. 01-2384.
7. ☐ Other:



William J. Zychlewicz
Reg. No. 51,366
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, MO 63102
314-621-5070

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Metz et al.	:	
	:	Art Unit: 2882
Serial No.: 10/766,362	:	
	:	Examiner: Bruce, David Vernon
Filed: January 28, 2004	:	
	:	
For: METHODS AND APPARATUS	:	
FOR ANOMALY DETECTION	:	

AMENDMENT

Mail Stop: Amendment
Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In response to the Office Action Dated October 24, 2005, and made final,
Applicants respectfully request entry of the following amendment:

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SCANNED

By: AMP 11-9-05

IN THE CLAIMS

1. (original) A method for detecting an anomaly, said method comprising:

performing a computed tomography (CT) scout scan to obtain data; and

supplying the obtained data to a radiographic computer aided detection (CAD)
algorithm.

2. (original) A method in accordance with Claim 1 further comprising:

displaying results from the CAD algorithm to a user; and

displaying a CT scout image generated from the obtained data to the user.

3. (original) A method in accordance with Claim 1 further comprising:

determining a confidence level of the CAD algorithm;

comparing the determined confidence level to a threshold; and

performing a second CT scout scan when the determined confidence level is
less than the threshold.

4. (original) A method in accordance with Claim 1 further comprising:

determining a confidence level of the CAD algorithm;

comparing the determined confidence level to a threshold;

performing a volumetric CT scan when the determined confidence level is less
than the threshold;

generating at least one Digitally Reconstructed Radiograph (DRR) from the
volumetric CT scan; and

supplying the DRR to the radiographic CAD algorithm.

5. (original) A method in accordance with Claim 1 further comprising:

determining a confidence level of the CAD algorithm;

comparing the determined confidence level to a threshold;

performing a volumetric CT scan when the determined confidence level is less than the threshold;

generating at least one Digitally Reconstructed Radiograph (DRR) from the volumetric CT scan; and

displaying the DRR.

6. (original) A method in accordance with Claim 4 further comprising

acquiring an x-ray projection image; and

mapping the DRR and results from the radiographic CAD algorithm onto an x-ray projection space.

7. (currently amended) A method for detecting an anomaly, said method comprising:

performing a computed tomography (CT) volumetric scan to acquire CT data;

generating at least one Digitally Reconstructed Radiograph (DRR) from the acquired CT data; and

providing the DRR to a radiographic computer aided detection (CAD) algorithm;

determining a confidence level of the CAD algorithm;

comparing the determined confidence level to a threshold;

performing a second volumetric CT scan when the determined confidence level is less than the threshold;

generating at least one Digitally Reconstructed Radiograph (DRR) from the second volumetric CT scan; and

providing the DRR from the second volumetric CT scan to the radiographic CAD algorithm.

8. (original) A method in accordance with Claim 7 further comprising:

acquiring an x-ray projection image; and

mapping the DRR and results from the radiographic CAD algorithm onto an x-ray projection space.

9. (original) A method in accordance with Claim 7 further comprising displaying results from the radiographic CAD algorithm with a corresponding CT slice.

10. (canceled)

11. (original) A method in accordance with Claim 10 further comprising:

acquiring an x-ray projection image; and

map the DRR from the second volumetric CT scan and results from the radiographic CAD algorithm regarding the DRR from the second volumetric CT scan onto an x-ray projection space.

12. (currently amended) A Computed Tomography system comprising:

an x-ray source;

an x-ray detector; and

a computer operationally coupled to said x-ray source and said detector, said computer configured to:

execute a radiographic Computer Aided Detection (CAD) algorithm on Digitally Reconstructed Radiograph (DRR) data derived from a first CT scan of an object;

perform a scout scan of the object using said source and detector to generate CT scout scan data; and

execute the radiographic CAD algorithm on the generated CT scout scan data.

13. (previously presented) A system in accordance with Claim 12, wherein to execute a radiographic CAD algorithm said computer further configured to:

generate a plurality of Digitally Reconstructed Radiographs (DRR) from CT data; and

execute the radiographic CAD algorithm on the generated DRR.

14. (canceled)

15. (original) A system in accordance with Claim 12, wherein said computer further configured to:

compare a confidence level of the radiographic CAD algorithm with a predetermined threshold; and

perform a second CT scan of the object when the confidence level is below the predetermined threshold.

16. (original) A system in accordance with Claim 12, wherein to execute a radiographic CAD algorithm, said computer further configured to:

perform a volumetric CT scan of the object to generate volumetric CT data;

generate a plurality of Digitally Reconstructed Radiographs (DRR) each in a different orientation;

execute the radiographic CAD on each DRR to obtain results;

map the obtained results on the volumetric CT data; and

display the volumetric CT data including the mapped results.

17. (original) A system in accordance with Claim 15, wherein to perform a second CT scan said computer further configured to:

perform a volumetric CT scan of the object to generate volumetric CT data;

generate a plurality of Digitally Reconstructed Radiographs (DRR) each in a different orientation;

execute the radiographic CAD on each DRR to obtain results;

map the obtained results on the volumetric CT data; and

display the volumetric CT data including the mapped results.

18. (original) A system in accordance with Claim 17, wherein to execute a radiographic Computer Aided Detection (CAD) algorithm, said computer configured to execute a radiographic Computer Aided Detection (CAD) algorithm on data derived from a first CT scan of an object, wherein the first CT scan comprises a CT scout scan.

19. (original) A system in accordance with Claim 17, wherein to execute a radiographic Computer Aided Detection (CAD) algorithm, said computer configured to execute a radiographic Computer Aided Detection (CAD) algorithm on data derived from a first CT scan of an object, wherein the first CT scan comprises a CT volumetric scan.

20. (currently amended) A computer readable medium encoded with a program configured to instruct a computer to execute a radiographic Computer Aided

Detection (CAD) algorithm on Digitally Reconstructed Radiograph (DRR) data derived from a CT scan of an object;

obtaining an x-ray projection image;

supplying the obtained x-ray projection image to a computer aided detection (CAD) algorithm; and

displaying results of the CAD algorithm on at least one of a Computed Tomography (CT) scout image and a Digitally Reconstructed Radiograph (DRR);

supplying the CT scout image to the computer aided detection (CAD) algorithm;

registering results from the CAD algorithm regarding the CT scout image with results from the CAD algorithm regarding the x-ray projection image; and

displaying the registered results regarding both the CT scout image and the x-ray projection image in a combined display.

21. (canceled)

22. (canceled)

23. (original) A method in accordance with Claim 22 wherein said displaying comprises displaying the registered results regarding both the CT scout image and the x-ray projection image in a combined display such that a user can differentiate the results from the results from the CAD algorithm regarding the CT scout image from the results from the CAD algorithm regarding the x-ray projection image.

24. (currently amended) A method for detecting an anomaly, said method comprising:

performing a volumetric CT scan of an object;

generating at least one digitally reconstructed radiograph (DRR) from the volumetric CT scan; and

supplying the DRR to a radiographic computer aided detection (CAD) algorithm;

determining a confidence level of the CAD algorithm;

iteratively performing a volumetric CT scan, generating at least one DRR, providing the DRR to the radiographic CAD algorithm, and determining a confidence level of the results until the confidence level exceeds a threshold.

25. (canceled)

26. (canceled)

27. (original) A method for detecting an anomaly, said method comprising:

performing a volumetric CT scan of an object to obtain CT data;

obtaining an x-ray projection of the object;

supplying the CT data to a CAD algorithm to obtain CT CAD results;

supplying the x-ray projection to a CAD algorithm to obtain x-ray CAD results; and

displaying the CT CAD results with the x-ray CAD results in a combined display.

28. (original) A method in accordance with Claim 27 wherein said displaying comprises displaying the CT CAD results with the x-ray CAD results in a combined display such that a user can differentiate the CT CAD results from the x-ray CAD results.

29. (original) A method in accordance with Claim 27 wherein supplying the CT data to a CAD algorithm to obtain CT CAD results comprises:

generating at least one digitally reconstructed radiograph (DRR) from the volumetric CT scan; and

supplying the DRR to a radiographic computer aided detection (CAD) algorithm to obtain CT CAD results.

30. (original) A computer readable medium embedded with a program configured to instruct a computer to:

receive CT data regarding a volumetric CT scan of an object;

receive an x-ray projection of the object;

perform a CAD analysis of the received CT data to generate CT CAD results;

perform a CAD analysis of the received x-ray projection to generate x-ray CAD results; and

combine the CT CAD results with the x-ray CAD results.

REMARKS

The Office Action dated October 24, 2005 has been carefully reviewed and the foregoing amendment and following remarks have been made in consequence thereof.

Claims 1-30 are pending in this application. Claims 1-6 and 27-30 are allowed. Claims 7-9, 12, 13, 16, 20, 21, and 24-26 stand rejected. Claims 10, 11, 14, 15, 17-19, 22, and 23 are objected to. Claims 10, 14, 21, 22, 25, and 26 have been canceled.

The rejection of Claims 7, 12, 13, 20, 21, and 24 under 35 U.S.C. § 102(b) as being anticipated by Gur et al. (U.S. Patent No. 5,838,815) "Gur" is respectfully traversed.

Gur describes a method of detecting abnormal regions in a digital radiograph that includes for each identified suspected abnormal region, extracting multiple topographic layers of the region from the digital radiograph, determining features of the region in each of the layers, and applying inter-layer multivariate non-linear criteria to the features to determine whether the suspected abnormal region is to be classified as an abnormal region. The method includes a rule-setting phase wherein a CAD scheme is optimized using a database of known images and a use or application phase wherein new images are analyzed by the CAD scheme.

Claim 10 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 7 has been amended to include all the limitations of Claim 10 and Claim 10 has been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 7 is patentable over Gur.

Claims 8, 9, and 11 depend from Claim 7. When the recitations of Claims 8, 9, and 11 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claims 8, 9, and 11 likewise are patentable over Gur.

Claim 14 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim

and any intervening claims. Claim 12 has been amended to include all the limitations of Claim 14 and Claim 14 has been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 12 is patentable over Gur.

Claims 13 and 15-19 depend from Claim 12. When the recitations of Claims 13 and 15-19 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 13 and 15-19 likewise are patentable over Gur.

Claim 14 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 12 has been amended to include all the limitations of Claim 14 and Claim 14 has been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 12 is patentable over Gur.

Claims 13 and 15-19 depend from Claim 12. When the recitations of Claims 13 and 15-19 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 13 and 15-19 likewise are patentable over Gur.

Claim 22 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 20 has been amended to include all the limitations of Claims 21 and 22, and Claims 21 and 22 have been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 20 is patentable over Gur.

Claim 23 depends from Claim 20. When the recitations of Claim 23 are considered in combination with the recitations of Claim 20, Applicants submit that dependent Claim 23 likewise is patentable over Gur.

Claim 24 recites a method for detecting an anomaly including "performing a volumetric CT scan of an object...generating at least one digitally reconstructed radiograph (DRR) from the volumetric CT scan...supplying the DRR to a radiographic computer aided detection (CAD) algorithm...determining a confidence level of the CAD algorithm...iteratively performing a volumetric CT scan, generating at least one DRR,

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providing the DRR to the radiographic CAD algorithm, and determining a confidence level of the results until the confidence level exceeds a threshold.”

Gur does not describe nor suggest a method of displaying data as recited in Claim 24. Specifically, Gur does not describe nor suggest determining a confidence level of the CAD algorithm and iteratively performing a volumetric CT scan, generating at least one DRR, providing the DRR to the radiographic CAD algorithm, and determining a confidence level of the results until the confidence level exceeds a threshold. Rather, in contrast to the present invention, Gur describes a method of detecting abnormal regions in a digital radiograph wherein the method includes a rule-setting phase where a CAD scheme is optimized using a database of known images and an application phase wherein new images are analyzed by the CAD scheme. Accordingly, and for at least the reasons set forth above, Claim 24 is submitted to be patentable over Gur.

For at least the reasons above, Applicants respectfully request the § 102 rejection of Claims 7, 12, 13, 20, 21, and 24 be withdrawn.

The rejection of Claims 8, 9, 16, 25, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Gur et al. (U.S. Patent No. 5,838,815) “Gur” is respectfully traversed.

Claims 8 and 9 depend from Claim 7, which as described above is in condition for allowance. When the recitations of Claims 8 and 9 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claims 8 and 9 likewise are patentable over Gur.

Claim 16 depends from Claim 12. When the recitations of Claim 16 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claim 16 likewise is patentable over Gur.

Claims 25 and 26 are canceled.

For the reason set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 8, 9, 16, 25, and 26 be withdrawn.

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The objection to Claims 10, 11, 14, 15, 17-19, 22, and 23 as dependent upon rejected base claims is respectfully traversed.

Claim 7 has been amended to include all the limitations of Claim 10 and Claim 10 has been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 7 is patentable over Gur.

Claim 11 depends from Claim 7. When the recitations of Claim 11 are considered in combination with the recitations of Claim 7, Applicants submit that dependent Claim 11 likewise is patentable over Gur.

Claim 12 has been amended to include all the limitations of Claim 14 and Claim 14 has been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 12 is patentable over Gur.

Claims 15 and 17-19 depend from Claim 12. When the recitations of Claims 15, and 17-19 are considered in combination with the recitations of Claim 12, Applicants submit that dependent Claims 15, and 17-19 likewise are patentable over Gur.

Claim 20 has been amended to include all the limitations of Claims 21 and 22, and Claims 21 and 22 have been canceled. There are no other intervening claims. Accordingly, Applicants respectfully submit Claim 20 is patentable over Gur.

Claim 23 depends from Claim 20. When the recitations of Claim 23 are considered in combination with the recitations of Claim 20, Applicants submit that dependent Claim 23 likewise is patentable over Gur.

Applicants according request that the objection to Claims 10, 11, 14, 15, 17-19, 22, and 23 be withdrawn.

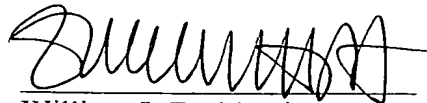
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In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



William J. Zychlewicz
Registration No. 51,366
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070

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NOTICE OF ALLOWANCE AND FEE(S) DUE

23465 7590 11/18/2005
JOHN S. BEULICK
C/O ARMSTRONG TEASDALE, LLP
ONE METROPOLITAN SQUARE
SUITE 2600
ST LOUIS, MO 63102-2740



EXAMINER	
BRUCE, DAVID VERNON	
ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 11/18/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,362	01/28/2004	Stephen W. Metz	132002	2899

TITLE OF INVENTION: METHODS AND APPARATUS FOR ANOMALY DETECTION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	02/21/2006

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Date 11-28-05

By: E. Deaton

ENTERED Date: 11/27/05

By: Kelly

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,362	01/28/2004	Stephen W. Metz	132002	2899
23465	7590	11/18/2005		

JOHN S. BEULICK
C/O ARMSTRONG TEASDALE, LLP
ONE METROPOLITAN SQUARE
SUITE 2600
ST LOUIS, MO 63102-2740

EXAMINER	
BRUCE, DAVID VERNON	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 11/18/2005

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 81 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 81 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

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Notice of Allowability

Application No.

10/766,362

Examiner

David V. Bruce

Applicant(s)

METZ ET AL.

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to After Final Amendment of 04 Nov 05.
2. ☒ The allowed claim(s) is/are 1-9, 11-13, 15-20, 23, 24 and 27-30.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

David V Bruce
 David V Bruce
 Primary Examiner
 Art Unit: 2882

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,362	01/28/2004	Stephen W. Metz	132002	2899
23465	7590	04/20/2006		
JOHN S. BEULICK C/O ARMSTRONG TEASDALE, LLP ONE METROPOLITAN SQUARE SUITE 2600 ST LOUIS, MO 63102-2740			EXAMINER BRUCE, DAVID VERNON	
			ART UNIT 2882	PAPER NUMBER

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Entered into PAGE/PIPS
Date 4-26-06
By: E. Deaton

SCANNED
By: 4/26/06 VR

ENTERED
Date: 4/26/06
By: mac
12553-368

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Supplemental Notice of Allowability	Application No.	Applicant(s)	
	10/766,362	METZ ET AL.	
	Examiner	Art Unit	
	Ed J. Glick	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

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 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
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 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>04132006</u>. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|---|--|

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Patent Examination

JUN 10 2008

Application/Control Number: 10/766,362

Page 2

Art Unit: 2882

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with William J. Zychlewicz on April 10, 2006.

The application has been amended as follows:

In claim 20, line 2, change "execute" to --perform a method for executing--.

In claim 20, line 4, change "object;" to --object, said method comprising:--.

In claim 23, line 1, change "A method in accordance with Claim 22" to --The method in accordance with claim 20--.

This examiner's amendment was necessary to clarify the claim language and to correct an improper claim dependency.

Any inquiry concerning this communication should be directed to Ed J. Glick at telephone number 703-308-4858.


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER

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Examiner-Initiated Interview Summary	Application No. 10/766,362	Applicant(s) METZ ET AL.	
	Examiner Ed J. Glick	Art Unit 2882	

All Participants: (1) Ed J. Glick. (2) William J. Zychlewicz.

Status of Application: Allowed

(3) _____ (4) _____

Date of Interview: 10 April 2006 **Time:** _____

Type of Interview:
☒ Telephonic
☐ Video Conference
☐ Personal (Copy given to: ☐ Applicant ☐ Applicant's representative)

Exhibit Shown or Demonstrated: ☐ Yes ☒ No
If Yes, provide a brief description:

Part I.
Rejection(s) discussed:
none


Claims discussed:
20 and 23

Prior art documents discussed:
none

Part II.
SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:
Obtained authorization for an Examiner's amendment to clarify claim language and correct claim dependency.

Part III.
☒ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.
☐ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER
(Examiner/SPE Signature)

(Applicant/Applicant's Representative Signature – if appropriate)